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EXAMINER	
ECHELMEYER, ALIX ELIZABETH	
ART UNIT	**PAPER NUMBER**
1745	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/743,866	HONG ET AL.	
	Examiner	Art Unit	
	Alix Elizabeth Echelmeyer	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 July 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10 and 13-66* is/are pending in the application.

4a) Of the above claim(s) *17-66* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10,13-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response

1. This Office Action is in response to the arguments filed July 5, 2007. Claims 11 and 12 were previously cancelled. Claims 17-66 were previously withdrawn. Claims 1-10 and 13-16 are pending and are rejected finally for the reasons given below.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 2, 3, 15 and 16 are rejected under 35 U.S.C. 102(b) as being obvious over, or in the alternative, under 35 U.S.C. 103(a) as being unpatentable over Moriwaka et al. (US 6,258,480).

Moriwaki et al. discloses a battery and a method of manufacturing the given battery. The battery contains a positive electrode, a negative electrode, a separator, and

an electrolyte (col. 7 lines 13-17 and 43-46). The battery case is constructed of aluminum or an aluminum alloy and has a nickel layer deposited on the outside or inside face of the battery case (col. 3 lines 58-63). The thickness of the nickel layer is at least 3 to 5 μm but less than 30 μm (col. 11 lines 47-54).

The thickness of the bottom portion of the battery case is 0.5 mm (col. 7 lines 57-62, See claim 20). Moriwaki et al. teaches that it is beneficial to provide a nickel layer containing aluminum having a thickness of up to 30 μm on the outside of the metal case (col. 11 lines 54-57).

Claim 3 is a process-by-product claim. The product produced by the process-by-product claim 3 is the product stated in claim 2. The cited references teach a product that is the same as, or an obvious variant of, the product set forth in claims 2 and 3. Claim 3 is alternatively unpatentable. The product of claim 2 and the product of claim 3 appear to be the same. See MPEP 2113 and In re Marosi, 710 F.2d 799, 218 USPQ 289 (Fed. Cir. 1983)

5. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moriwaki et al as applied to claim 1 above, and further in view of Seiji (Japan 60 124351). The disclosure of Moriwaki et al. as discussed above is incorporated herein. Moriwaki et al. does not teach a layer on the outside surface of the battery can that contains copper. Seiji discloses a nonaqueous electrolyte cell having a copper layer on the outside surface of the positive electrode enclosure (See abstract). The reference teaches that the use of nickel or copper on the outside surface of the terminal face

reduces the contact resistance. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Moriwaki et al. to include copper on the outside surface of the battery case to reduce contact resistance as taught by Seiji.

Claim 5 is a process-by-product claim. The product produced by the process-by-product claim 5 is the product stated in claim 4. The cited references teach a product that is the same as, or an obvious variant of, the product set forth in claims 4 and 5. Claim 5 is alternatively unpatentable. The product of claim 4 and the product of claim 5 appear to be the same. See MPEP 2113 and In re Marosi, 710 F.2d 799, 218 USPQ 289 (Fed. Cir. 1983).

6. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moriwaki et al. as applied to claim 1 above, and further in view of Morishita et al. (US 5,976,729).

The disclosure of Moriwaki et al. as discussed above is incorporated herein.

Moriwaki et al. does not teach connection of the safety device to the cell via welding.

Morishita et al. discloses a cell with a reliable protective circuit or safety device. The bottom surface of the battery can is welded to a first lead plate and the first lead plate is welded via resistance welding to a second lead plate for connection to the battery (col. 1 lines 54-61; col. 2 lines 59-63). Therefore, the protective circuit or safety

device is connected to the battery. The first lead plate may be constructed of nickel or a nickel alloy (col. 2 lines 24-26).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the cell of Moriwaki et al. connect the safety device of Morishita et al. to the cell via a welding method to ensure proper protection of the cell during abnormal operation.

Claim 7 is a process-by-product claim. The product produced by the process-by-product claim 7 is the product stated in claim 6. The cited references teach a product that is the same as, or an obvious variant of, the product set forth in claim 7. Claim is alternatively unpatentable. The product of claim 6 and the product of claim 7 appear to be the same. See MPEP 2113 and In re Marosi, 710 F.2d 799, 218 USPQ 289 (Fed. Cir. 1983)

7. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moriwaki et al. in view of Morishita et al. as applied to claim 6 above, and further in view of Seiji. Additionally, datasheets for copper and copper alloys have been cited as evidence as discussed below.

The disclosure of Moriwaki et al. in view of Morishita et al. as discussed above are incorporated herein.

Moriwaki et al. in view of Morishita et al. does not teach an outside layer comprised of a first material and a lead connected thereto comprised of a second material having a melting point different from the layer material by 500 °C or 200°C or

less. Morishita discloses that a two-layer lead is attached to the bottom surface of the battery.

The first layer of the lead is aluminum or an aluminum alloy and the second layer being nickel or a nickel-plated iron, nickel-plated stainless, or nickel-platted copper (col. 2 lines 33-36; col. 3 lines 18-20).

Moriwaki et al. in view of Morishita et al. does not explicitly teach that the melting point of the materials differ by 500°C or less or that they differ by 200°C or less.

Seiji teaches a nonaqueous electrolyte cell having a copper layer on the outside surface of the positive electrode enclosure or can (See abstract). Seiji teaches that the use of nickel or copper on the outside surface of the terminal face reduces the contact resistance.

A lead constructed of a copper-nickel alloy has a melting point of 1170 °C (Cupper & Alloys datasheet, page 3). The copper outside layer of the battery can has a melting point of 1083 (chemical Elements Basic Information-Copper).

The melting point of the battery can outside layer and the lead material differ by 200 °C or less.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the battery can outside layer of Moriwaki et al. to use copper in the construction of the battery can as taught by Seiji to reduce the contact resistance. The melting point of Copper differs by 500 °C, 200 °C, or less from the melting point of the lead construction material, a copper-nickel alloy taught by Morishita et al. The proper selection of the construction materials in contact in the battery

eliminates the adverse effects such as corrosion that result from joining dissimilar metals.

8. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Moriwaki et al. in view of Seiji as applied to claim 4 above, and further in view of Morishita.

The disclosure of Moriwaki et al. in view of Seiji as discussed above is incorporated herein.

Moriwaki et al. in view of Seiji does not teach a lead unit connected to a safety device.

Morishita discloses a cell with a reliable protective circuit or safety device having leads connecting the battery and the associated protective circuit or safety device (col. 1 lines 54-61; col. 2 lines 59-63).

It is well known in the art that soldering is a common technique used to join two metals and has therefore has not been given patentable weight.

It would have been obvious to one having ordinary skill in the art at the time of the invention to modify Moriwaki et al. in view of Seiji et al. to include an electrically connected safety device for the battery for cell protection as taught by Morishita et al.

9. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moriwaki et al as applied to claim 1 above, and further in view of Shibata et al. (EP 0 899 799 A2).

The disclosure of Moriwaki et al. as discussed above is incorporated herein.

Moriwaki et al. does not teach a metal layer between the layer and the outer surface of the can having a first material selected from Zn, Sn, Fe, and Cr.

Shibata discloses a jar can for a secondary battery. The bottom surface of the battery can consist of multiple layers. Layer 1 is the aluminum or aluminum alloy of the battery can bottom surface. Layer 2 is the layer adjacent to the exterior to the bottom of the can and is constructed of iron or a ferrous alloy. Layer 3 is the layer adjacent to the exterior surface of the iron layer and it is constructed of nickel (paragraphs18- 23). The iron layer maintains the stiffness or structural strength of the can and the use of aluminum reduces the weight of the battery can (paragraphs 19-21).

The reference does not explicitly state that the material in layer 1 is the same as the material in layer 3. The aluminum alloy of layer 1 may contain nickel as a common material.

It would have been obvious to one having ordinary skill in the art at the time of the invention to modify Moriwaki et al. to include iron as an internal layer of the bottom of the battery can to ensure the structural strength of the can is maintained as taught by Shibata et al.

Response to Arguments

10. Applicant's arguments filed July 5, 2007 have been fully considered but they are not persuasive. Applicant's main argument concerns the thickness of the outer layer of the battery can. According to Applicant, Moriwaki et al. do not teach the claimed range, of a layer having a thickness of 30μm - 100μm, but instead teach a thickness of "less

than 30μm." While Moriwaki et al. teach that the thickness may be "less than 30μm", it is also taught that the thickness may be "up to 30μm" (column 11 line 55). This is being interpreted by the examiner to include 30μm, which is within the range of the instant claims.

This argument is also presented in reference to the rejections of claims 4 and 5 under 35 U.S.C. 103 over Moriwaki et al. in view of Seiji, claims 8 and 9 under 35 U.S.C. over Moriwaki et al. in view of Morishita et al. and Seiji, and claim 10 under 35 U.S.C. 103 over Moriwaki et al. in view of Seiji and Morishita et al.

Concerning the rejection of claims 6 and 7 under 35 U.S.C. over Moriwaki et al. in view of Morishita et al., Applicant argues that, since Morishita et al. do not describe a layer on the outer surface of the bottom of the can, it does not have all of the limitations of the instant claims. The examiner agrees that Morishita et al. do not disclose a layer on the outer surface of the bottom of the can; however, since Moriwaki et al. do teach such a layer, and since the safety device would function when attached to the can of Moriwaki et al. because the bottom of the can having the outer layer would be electrically conducting, the argument is not found convincing and the rejection is maintained.

Finally, concerning claims 13 and 14, Applicant argues that the rejection over Moriwaki et al. in view of Shibata et al. is not proper since one layer of the multilayer outer surface of Shibata et al. is not more than 5μm. This teaching of Shibata et al. references the cost of the nickel layer, stating that if the nickel layer is greater than 5μm, then the cost for nickel plating disadvantageously increases the manufacturing cost

([0031]). Moriwaka et al. teach that the strength of the electrical connections is raised when a thicker nickel layer is used (column 11 lines 56-68). One of ordinary skill in the art would recognize the importance of making stronger electrical connections, and could make an informed decision weighing the cost and electrical connection factors. Since Shibata et al. do not teach that a thicker nickel layer would adversely affect the operation of the battery itself, it would be within the level of ordinary skill in the art to follow the teaching of Moriwaka et al. concerning the thickness of the layer.

Conclusion

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alix Elizabeth Echelmeyer whose telephone number is 571-272-1101. The examiner can normally be reached on Mon-Fri 7-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Susy N. Tsang-Foster can be reached on 571-272-1293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Alix Elizabeth Echelmeyer
Examiner
Art Unit 1745

aee

SUSY TSANG-FOSTER
PRIMARY EXAMINER